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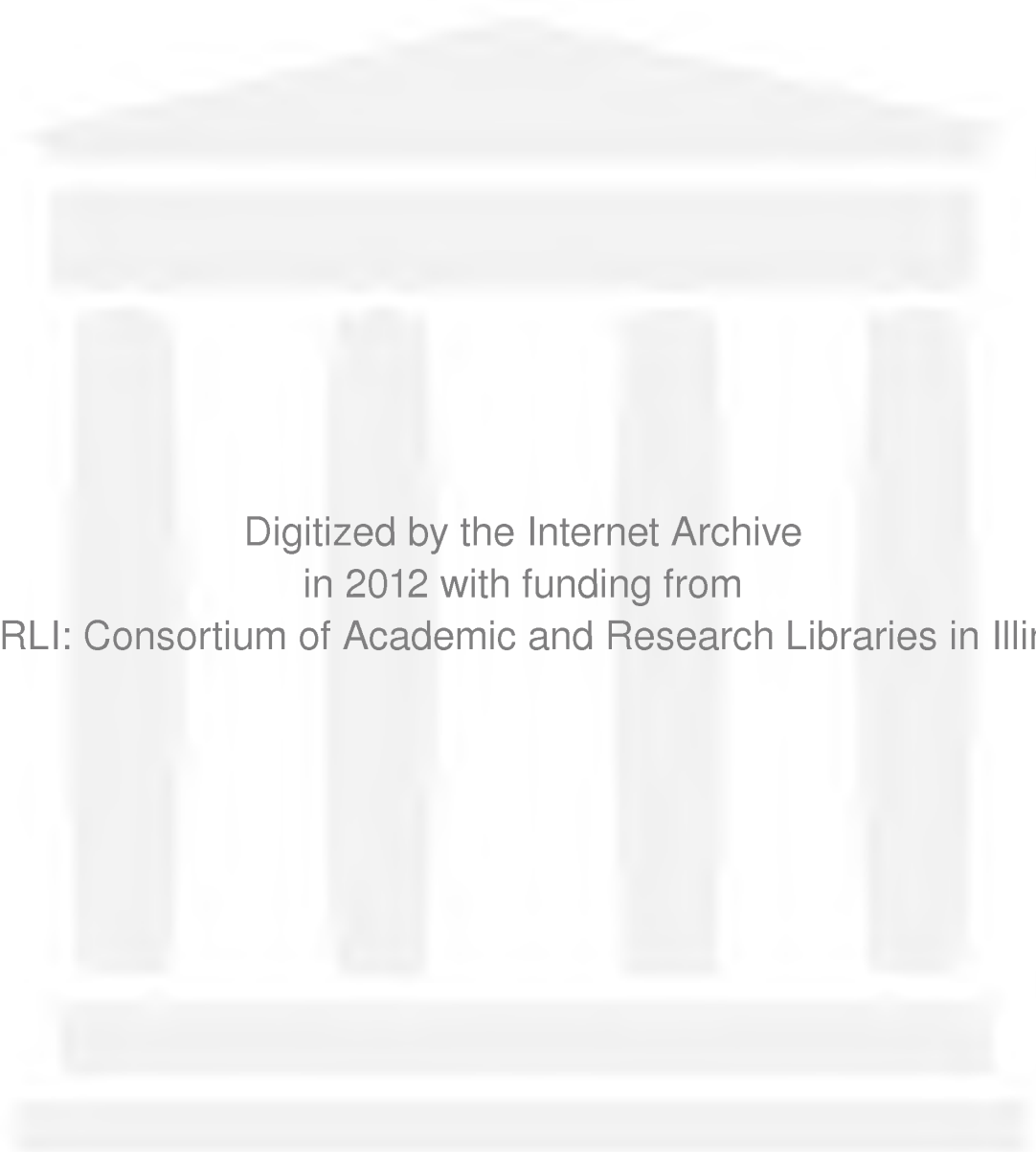

FINAL REPORT

HABITAT CHANGES IN THE LOWER CACHE RIVER OF SOUTHERN ILLINOIS: 1952-1991

Submitted by:

Cooperative Wildlife Research Laboratory, SIUC

Presented to:

U.S. Fish and Wildlife Service,
Ecological Services Suboffice, Carterville, IL
and
the U.S. Army Corps of Engineers, St. Louis District

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Habitat Changes in the Lower Cache River of Southern Illinois: 1952 - 1991

Final Report Submitted to the U. S. Fish and Wildlife Service,
Ecological Services Suboffice, Marion, IL and
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An analysis of habitat change (1952-1991) in two regions of the Cache River watershed in southern Illinois was conducted by interpreting satellite imagery, aerial photography, and National Wetland Inventory (NWI) data. The analysis measured changes in total areas of bottomland forest, cropland, open water, and non-forested wetlands located in the bottomlands of the two study areas. The study areas encompassed 19,640 acres surrounding Heron Pond/Little Black Slough (north area) and 21,471 acres surrounding Buttonland Swamp (south area) regions of the Cache River watershed. Analyses were conducted using computer image processing and geographic information system software (The Map and Image Processing System, MicroImages, Inc., Lincoln, NE.

Study area boundaries were manually digitized from 1:24,000 scale USGS topographic maps. Non-wetland habitats were interpreted and mapped primarily from a Landsat 5 Thematic Mapper satellite image (82 foot ground resolution) that was acquired on 21 August, 1991. Wetlands were identified by merging NWI digital data with satellite data

to create a composite computer image that depicted the current distribution of upland and wetland habitats. Habitat changes ca. 1950 to present was determined by interpretation of black and white aerial photographs dated 24 August, 1952 and 26 October, 1949 and comparisons with the composite satellite/NWI computer image. The computer image was modified to reflect changes in cropland, bottomland forest, open water, and non-forested wetlands that were detected since the early 1950's.

Habitat changes during 1952 - 1988 were also determined for a 418 acre segment of the north study area (Boss Island). Habitat interpretation on Boss Island was based on black and white (24 August, 1952) and color infrared (27 March, 1988) aerial photography. The photographs were optically scanned (16 foot ground resolution) to a computer file and habitats were mapped by editing the resulting digital images.

Except for Boss Island, the analyses considered only habitat changes that occurred within bottomlands of the two study areas. Bottomlands were defined as areas below 394 feet MSL. Bottomlands were delineated by overlaying Digital Line Graph (DLG) hypsography (elevation contour) data (1:100,000 scale) on satellite imagery. When NWI data was merged with DLG contour lines, forested wetlands and swamps fell entirely within elevation polygons that were at or below 394 feet MSL. Consequently, further processing was limited to portions of the two study areas below 394 feet MSL.

Bottomland forest included all forest cover below 394 feet MSL and included (but did not distinguish) cypress-tupelo and other bottomland hardwood communities. Open water included landscape elements classified as lakes, ponds, rivers, and ditches by NWI. Non-forested wetlands included emergent marsh, wet meadow, and shrub/scrub types. Cropland

consisted primarily of land devoted to production of row crops, but also included some idle and pasture lands as well.

Cropland increased by 278 acres, while bottomland forest declined by 278 acres. in the north study area during 1952 - 1991. There was a loss of 2,386 acres of bottomland forest and increases of 315 acres of non-forested wetlands and 2,071 acres of cropland in the south area during 1952 - 1991. Increases in the non-forested wetland class represented remnant wetlands in areas of forested bottomland that were cleared between 1952 and 1991. On Boss Island located in the north study area, cropland declined 281 acres (100% loss) while forest cover (coniferous and deciduous) increased by 280 acres. No changes in area of open water were evident except for a slight increase on Boss Island.

The attached tables provide summaries of habitat changes for the north and south study areas, and for Boss Island during the period ca. 1952 to 1991. Attached figures provide graphical representations of land use changes that were detected over this time period.

Table 1. Habitat changes within bottomland areas (<394 MSL) of the north study area (Heron Pond/Little Black Slough) during 1952 - 1991. Upland areas above 394 feet MSL were excluded from analyses.

	Total Area (acres)		Percent of Total Area		Percent
Habitat Class	1952	1991	1952	1991	Change
Bottomland Forest	7,087	6,809	36.2	34.7	-3.9
Non-forested Wetland	544	544	2.8	2.8	0.0
Open Water	44	44	0.2	0.2	0.0
Cropland	3,898	4,176	19.8	21.3	+7.1
Urban/other	21	21	0.1	0.1	0.0
Upland	8,046	8,046	41.0	41.0	0.0

Table 2. Habitat changes within bottomland areas (<394 MSL) of the south study area (Buttonland Swamp) during 1952 - 1991. Upland areas above 394 feet MSL were excluded from analyses.

	Total Area (acres)		Percent of Total Area		Percent
Habitat Class	1952	1991	1952	1991	Change
Bottomland Forest	6,343	3,957	29.5	18.4	-37.6
Non-forested Wetland	748	1,063	3.5	5.0	+42.1
Open Water	235	235	1.1	1.1	0.0
Cropland	13,219	15,290	61.6	71.2	+15.7
Urban/other	80	80	0.4	0.4	0.0
Upland	846	846	3.9	3.9	0.0

Table 3. Habitat changes on Boss Island located in the north study area (Heron Pond/Little Black Slough) during 1952 - 1991. Upland areas above 394 feet MSL were not excluded from analyses.

	Total Area (acres)		Percent of Total Area		Percent
Habitat Class	1952	1991	1952	1991	Change
Bottomland Forest (<394 ft.)	107.0	295.5	25.6	70.7	-172.2
Bottomland Coniferous Forest (<394 ft.)	0.0	51.1	0.0	12.2	---
Upland Forest	29.5	54.6	7.0	13.1	+85.1
Upland Coniferous Forest	0.0	16.0	0.0	3.8	---
Open Water	0.5	0.8	0.1	0.2	+60.0
Cropland	281.0	0.0	67.2	0.0	-100.0

Figure 1. Habitat changes in the vicinity of Heron Pond and Little Black Slough in the Cache River watershed of southern Illinois during 1952-1991. Upland areas (>394 MSL) are shown in white.

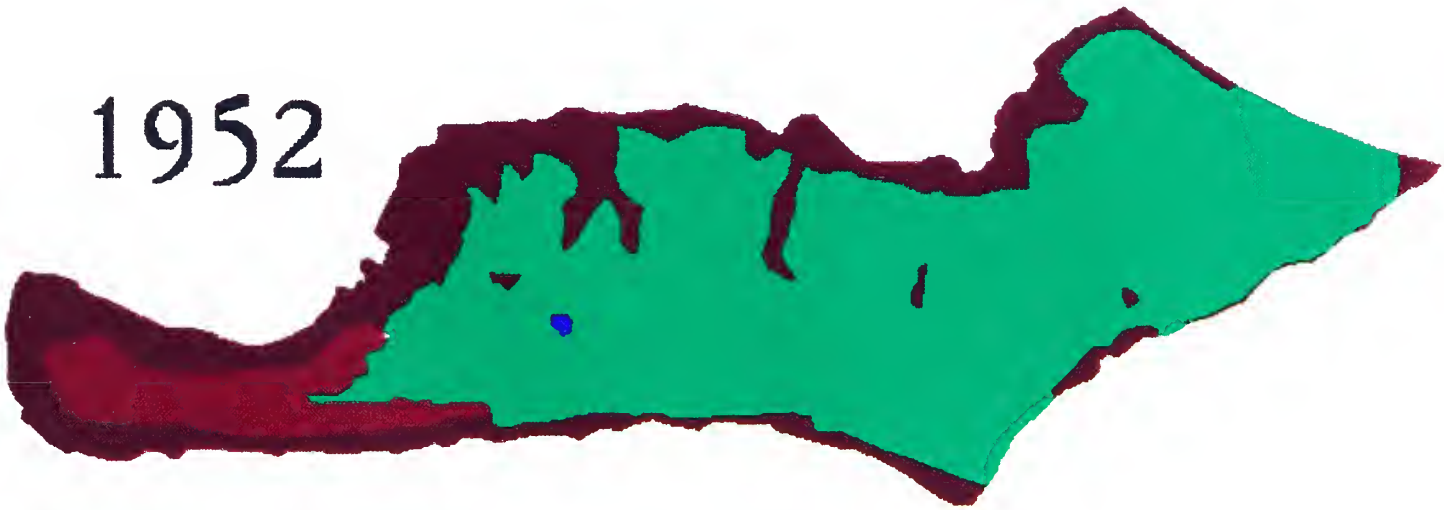
Figure 2. Habitat changes in the vicinity of Buttonland Swamp in the Cache River watershed of southern Illinois during 1952-1991. Upland areas (>394 MSL) are shown in white.

Figure 3. Habitat changes on Boss Island in the Cache River watershed of southern Illinois during 1952-1991.

HABITAT CLASSIFICATION

BOSS ISLAND

1952



1991

CLASSES

- BOTTOMLAND FOREST
- OPEN WATER
- UPLAND FOREST
- CROPLAND
- BOTTOMLAND CONIFEROUS
- UPLAND CONIFEROUS
- 1952 CROP TO 1991 FOREST